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Evaluation of Inguinal Hernia Repair with Prolene Mesh as Day Case Surgery

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Abstract:
Background: *Inguinal hernia is an ancient malady, as aged, presupposedly, as man himself.Treatment of this condition is only surgical . While in the past hernia surgery was carried out mainly under general and spinal anesthesia, in recent years, there is increased emphasis on use of local anaesthesia in tension free mesh repair of inguinal hernia.*
Objective: *To evaluate feasibility of inguinal hernia repair with prolene mesh under local anesthesia in an out-patient regime, with safety and efficacy.*
Methods: *We prospectively evaluated 40 patients undergoing inguinal hernia repair under local anesthesia betweenAugust2017 and January 2019. All patients underwent elective surgery and were analyzed regarding surgical outcome, complications and hospital stay.*
Results: *Total of 40 patients, 39 males and 1 female, were included in this study. Maximum incidence of the hernia was found in patients of age 60 and above (37.5%). Right sided hernia predominated with right to left ratio of 1.66:1. The ratio of indirect to direct was 1.94:1. One (2.5%) case needed spinal anesthesia. Majority of patients were discharged on the day of surgery. There were no recurrences during our follow-up period.*
Conclusion: *Tension-free mesh repair under local anaesthesia is simple, safe, cost effective and lead to reduced hospital stay.*
Key Words: *Inguinal Hernia, Lichtenstein Repair, Day Case Surgery.*

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I. Introduction:

Hernia is generally defined as the protrusion of a viscus from the cavity in which it is normally contained .Inguinal hernia repair is one of the most common procedure performed all over the world in adults**.**[1-3]Mesh repairs are superior to "nonmesh" tissue-suture repairs in repair of inguinal hernias.[4]Lichtenstein tension free mesh repair technique for adult open hernia repair is widely accepted as standard procedure for hernia repair worldwide**.**The open tension free prosthetic mesh repair of inguinal hernia (Lichtenstein repair**)** under local anaesthesia is a simple, safe and effective technique as day case surgery with added advantages of early ambulation and return to work and reduced risk of nosocomial infections.[5]

In day case surgery, patient arrives at and leaves the day case surgery unit (DSU) on the same day, usually within a couple of hours and almost always within 12 hours of surgery. Since day case surgery can reduce health care costs and has a remarkable safety record, its popularity continues to increase worldwide[6].

The earliest reference for day case surgery is mentioned as early as beginning of the 19th century by James Nicoll a Glassgow surgeon who performed almost 9000 outpatient operations on children in 1903[7] and later in 1912 when Ralphwaters from Iowa, USA described The Down Town Anaesthesia Clinic, where he gave anaesthesia for minor outpatient surgery[8]. However, over the next two decades, it lost its momentum, in 1960

the first hospital based ambulatory unit was developed. The formal development of ambulatory anaesthesia occurred with the establishment of the Society for Ambulatory Anaesthesia (SAMBA) in 1984[9] and with the evolution of postgraduate subspeciality training programme. The potential for day case surgery has increased over the last few years.

Success of day case surgery can be attributed to advances in surgical techniques and in the field of anaesthesiology.

Apart from cost containment, other benefits of day case surgery are: decompression of busy hospital beds, less nosocomial infections and early recovery in home environment with the family. Thus, there is less disruption of personal lives.

II. Materials And Methods:

After approval of ethical committee, 40 cases of uncomplicated inguinal hernia who underwent Lichtenstein repair as day case surgey during August 2017 till January 2019 were studied at Government Medical College and GNDH, Amritsar, Punjab. An informed consent of the patients was taken for the use of mesh, after duly explaining the procedure. A proforma was made to record the details of the patient and the surgery.

TECHNIQUE OF LOCAL ANAESTHESIA:

60 ml of lignocaine/xylocaine (2%) was used for infiltration. 3 ml of sodium-bi-carbonate (7.5%) was added to take away the sting of infiltration and ensure instant onset of analgesia. Approximately 5ml of the mixture was infiltrated along the line of incision utilizing a 3 cms long 24/25 gauge needle inserted into the sub-dermic tissues parallel with the surface of the skin, advancing the needle while infiltrating. Through the same needle, intradermal infiltration of approximately 3 ml of mixture along the line of incision was then made. 10ml of the mixture was then injected deep into the sub-cutaneous tissue by vertical insertion of the needle at 3-4 points, 2 cms apart in the line of incision.8-10 ml of the mixture was then injected beneath the aponeurosis of the External oblique muscle (E.O.A.) through a window created in the subcutaneous adipose tissue at the lateral corner of the incision to anaesthetise all the three major nerves in the closed canal. If required, a few ml of the mixture was also infiltrated at the level of the pubic tubercle, around the neck and inside the indirect hernia sac to achieve complete local anaesthesia. When required, further prolongation of the local anaesthesia was achieved by splashing 10 ml of the mixture into the inguinal canal prior to the closure of the E.O.A. and in the subcutaneous space prior to skin closure.

FOLLOW UP: The patients were followed up for 6 months. Each patient was called for re-examination 3 weeks, 3 months and 6 months after the removal of sutures for recording any complications or recurrence.

III. Results:

In this study 39 patients were males and 1 female. The youngest patient was 17 years old and oldest one was 76 years. Maximum incidence of the hernia was found in patients of age 60 and above (37.5%)., Twenty two (55.0%) were in strenuous work whereas 18 (45%) in moderate to sedentary workers. Right sided hernia predominated with right to left ratio of 1.66:1. Majority of the hernia were of indirect type. The ratio of indirect to direct was 1.94:1. One (2.5%) case needed spinal anesthesia as the patient was uncomfortable undergoing surgery under local anesthesia. In 2 (5%) cases, help of anesthesiologist was sought with midazolam or ketamine because patients were uncooperative during operation. Thirty one (77.5%) patients were discharged on the day of operation. Two (5%) patients were discharged on the 1st post-operative day and 1 (2.5%) on 2nd post-operative day due to complaint of moderate to severe pain. Four (10%) patients were apprehensive for discharge before suture removal. They were discharged on post-operative day 7 after removing all sutures. There was 1 (2.5%) case of wound infection treated by antibiotics and anti-inflammatory drugs along with antiseptic dressing. There was a single (2.5%) case of wound hematoma drained by sterile syringe aspiration. The patient was prescribed anti-inflammatory drugs and antibiotics orally. There were 2 (5%) patients of scrotal swelling who were treated by scrotal support and anti-inflammatory drugs. None of the patients had any complaint at the time of follow-up after 3 weeks and 3 months of suture removal. There was no case of recurrence till follow-up of 6 months.

TABLE I: SHOWING AGE DISTRIBUTION

Age (Years)	No. of patients	Percentage
<29	2	5.0
30-39	9	22.5
40-49	9	22.5
50-59	5	12.5
≥60	15	37.5
Total	40	100.0

Table showing age distribution of patients. Maximum number of patients, 15 (37.5%), were of ≥60 years of age.

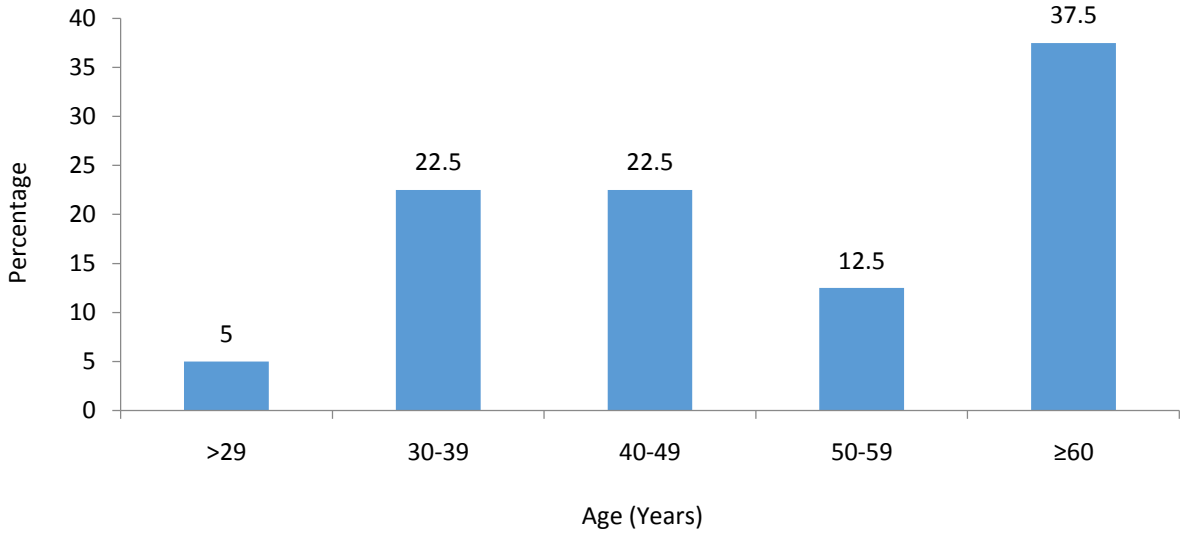


TABLE II: SHOWING SEX DISTRIBUTION

Sex	No. of patients	Percentage
Male	39	97.5
Female	1	2.5
Total	40	100.0

Table showing sex distribution of patients,39(97.5%) cases were male and only 1 (2.5%) case was female.

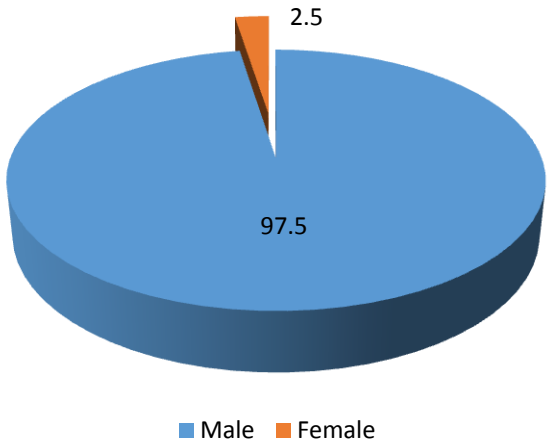


TABLE III: SHOWING OCCUPATION OF THE PATIENT

Occupation	No. of patients	Percentage
Strenuous	22	55.0
Moderate to Sedentary	18	45.0
Total	40	100.0

Table showing mode of activity of patients. 22 (55.0%) cases used to strernousactivities and 18 (45%) cases used to moderate to sedentary work.

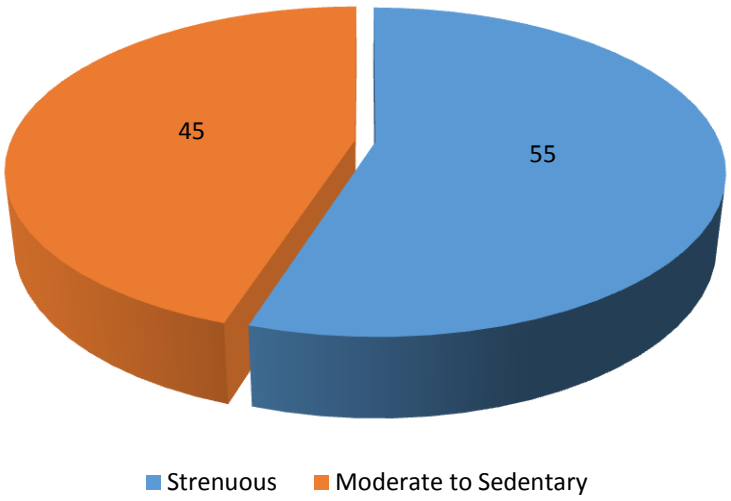


TABLE IV: SHOWING TYPE OF HERNIA

Type of Hernia	No. of patients	Percentage
Right Indirect Inguinal Hernia (RIIH)	21	52.5
Right Direct Inguinal Hernia (RDIH)	4	10.0
Left Indirect Inguinal Hernia (LIIH)	12	30.0
Left Direct Inguinal Hernia (LDIH)	3	7.5
Total	40	100.0

Table showing distribution of the type of hernia among cases under study. 21 (52.5%) cases had Right Indirect Inguinal Hernia (RIIH) NS ONLY 3 (7.5%) cases had Left direct Inguinal Hernia (LDIH).

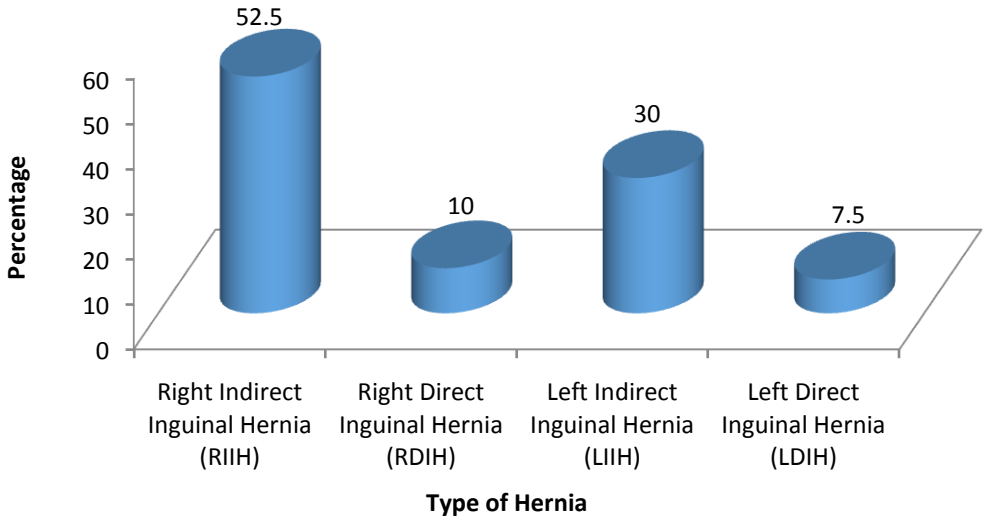


TABLE V: SIDE OF HERNIA

Side of Hernia	No. of patients	Percentage
Right	25	62.5
Left	15	37.5
Total	40	100.0

Table showing dexterity of hernia among the cases. 25 (62.5%) cases had right inguinal hernia and 15(37.5%) cases had left inguinal hernia.

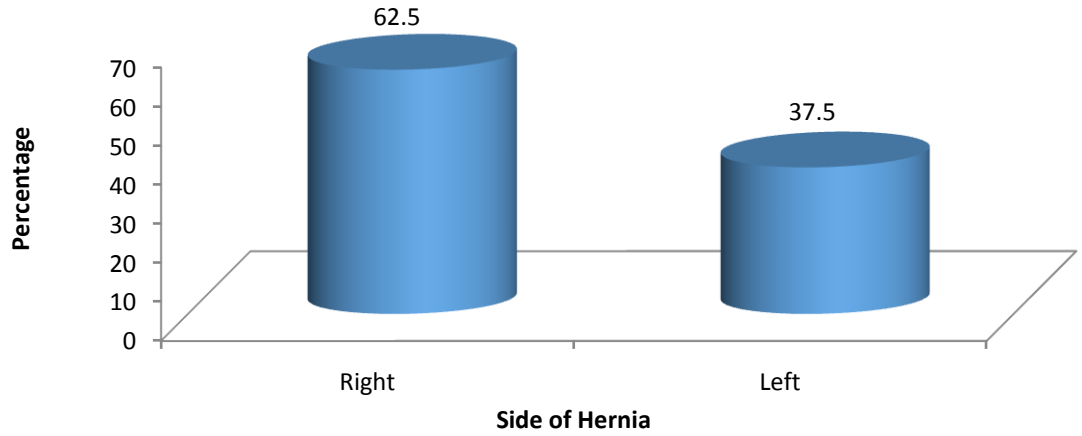
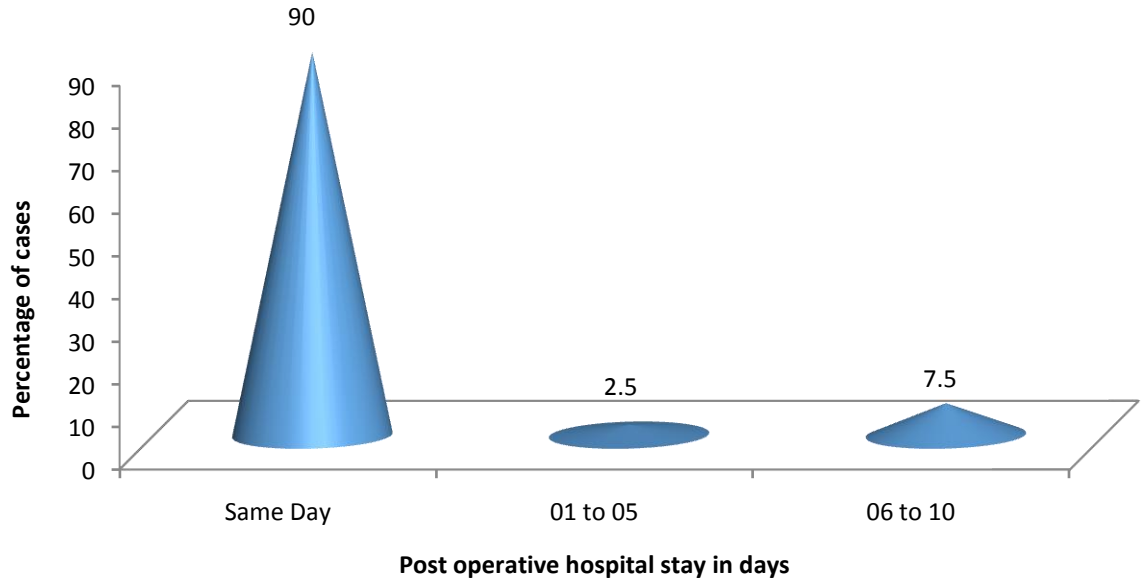


TABLE VI: SHOWING POST OPERATIVE HOSPITAL STAY IN DAYS

Post Operative Hospital Stay (Days)	No. of patients (n=40)	Percentage
Same Day	31	90.0
01 to 05	03	2.5
06 to 10	06	7.5
Total	40	100.0

Table showing post operative hospital stay of patients in days. 31(90%) cases were discharged on the day of surgery itself.



IV. Discussion:

According to international terminology, day surgery or ambulatory surgery is the admission of selected patients in hospital for a planned, non-emergency surgical procedure, returning home on the same day[10].

Success of day case surgery depends upon appropriate surgical techniques, careful selection and preparation of patients and also on proper organizational and management model. There are so many benefits of ambulatory surgery like cost effectiveness, low morbidity and mortality, lower incidence of infection, lack of dependence on the availability of hospital beds and shorter surgical waiting lists[11]. There is decompression of busy hospital beds and early recovery in home environment with family. Thus there is less disruption of personal lives[12].

The present study was done to assess the feasibility of Lichtenstein mesh repair for inguinal hernia under local anaesthesia as day case surgery.In this study, 39 patients were males and 1 female. The youngest patient was 17 years old and oldest one was 76 years. In this short series of 40 cases, the maximum incidence of the hernia was found in patients of age 60 and above (37.5%).

Out of 40herniapatients, 22 (55.0%) were strenous workers where 18 (45%) moderate to sedentary workers. While studying the occupation, the patients were categorized as strenous worker and sedentary workers depending on the type of work. Professions of strenous work include farming, labourer and military soldiers, while sedentary work included in the form of salesman, clerk, house wife, shopkeeper.

Right sided hernia predominated with right to left ratio of 1.66:1. Majority of the hernia were of indirect type. The ratio of indirect to direct was 1.94:1.

Hypertension was present in 12 (30%) cases, other cardiovascular problems with ECG changes in 13 (32.5%) cases. Constipation in 17 (42.5%) cases, there was history of renal stones in 2 (5%) cases. There was a history of alcohol intake 11 (27.5%) cases and smoking in 5 (12.5%) cases.

Thirty six (90%) cases were done under local anaesthesia. 1 (2.5%) case was done under spinal anaesthesia because patient was uncomfortable even after infiltration of local anesthesia. In 2 (5%) cases help of anaesthesiologist was sought with midazolam or ketamine because patients were very uncooperative during operation.

Most of the patients (31 patients) were discharged on the day of operation as day case basis. Two patients discharged on the first postoperative day and 1 on second post-operative day due to complaint of moderate to severe pain on the day of operation. Four patients were apprehensive for discharge not because of any discomfort but because they insisted for discharge after suture removal. They were discharged on post-operative day 7 after removing all sutures.

There was 1 (2.5%) case of wound infection treated by antibiotics and anti inflammatory drugs along with antiseptic dressing. There was a single case of wound haematoma treated by sterile syringe aspiration under all possible asepsis. The patient was prescribed anti inflammatory drugs and antibiotics orally. There were 2 (5.00%) patients of scrotal swelling who were treated by scrotal support and anti-inflammatory drugs.

In our study there was not even a single case of recurrence and mesh removal after operation.

V. Conclusion:

The technique of tension-free mesh repair of inguinal hernia under local anaesthesia is very much possible and it obviates the complications of general/spinal/epidural anaesthesia.The technique of tension free mesh repair is certainly possible even in those unfit patients which harbours cardiovascular/other medical problems. Most patients affected were males, especially involved in strenous activities, as compared to females.After prosthetic mesh repair of inguinal hernia under local anaesthesia, 90% patients were discharged same day. Thus this technique can be used as day case procedure. It aids economically to poor patients as only 10% patients had prolonged hospital stay. Rest could resume their routine early.The common typeandside which is in accordance with general population incidence. The patient needs no fasting for the operation and the oral feeds can be started almost immediately after the operation. The complications of hernia repair are less. The biased opinion that prosthetic repair carries increased risk of infection was found ill founded. There is almost no risk of recurrence after prosthetic hernia repair.Patient acceptance and appreciation of the procedure is gratifying.

Hence, we conclude that Lichtenstein hernia repair is mechanically reasonable, structurally sound, elegantly unsophisticated and results in greater, patient comfort, rapid rehabilitation, is cost effective and is sought with lesser complications. It can be safety performed under local anaesthesia on day case basis. We recommended this repair for the treatment of all types of primary inguinal hernias.

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